

\*\*\*\*\*  
NASA-15125 (October 2003)  
NATIONAL AERONAUTICS NASA  
AND SPACE ADMINISTRATION Superseding NASA-15125  
(September 1999)  
\*\*\*\*\*

SECTION TABLE OF CONTENTS

DIVISION 15 - MECHANICAL

SECTION 15125

STEAM TRAPS

10/03

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GENERAL REQUIREMENTS
- 1.3 SUBMITTALS

PART 2 PRODUCTS

- 2.1 MATERIALS
- 2.2 TRAP APPLICATION
- 2.3 TRAP-SIZING CRITERIA
- 2.4 TRAP TYPE, CONSTRUCTION, AND MATERIALS
  - 2.4.1 Type IB
  - 2.4.2 Type F&T
  - 2.4.3 Type T

PART 3 EXECUTION

- 3.1 TRAP INSTALLATION
- 3.2 COMPONENT INSTALLATION

-- End of Section Table of Contents --

\*\*\*\*\*  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
NASA-15125 (October 2003)  
NASA  
Superseding NASA-15125  
(September 1999)  
\*\*\*\*\*

SECTION 15125

STEAM TRAPS  
10/03

\*\*\*\*\*  
NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.

This section covers steam traps.

Drawings shall schedule the normal condensing rate for the service. Equipment and capacity safety factor shall be as specified hereinafter.

Drawings shall number each trap sequentially with the prefix ST.

Thermodynamic traps are not acceptable due to pressure limitations.

\*\*\*\*\*

PART 1 GENERAL

1.1 REFERENCES

\*\*\*\*\*  
NOTE: The following references should not be manually edited except to add new references. References not used in the text will automatically be deleted from this section of the project specification.  
\*\*\*\*\*

The publications listed below form a part of this section to the extent referenced:

ASTM INTERNATIONAL (ASTM)

ASTM A 105/A 105M (2001) Standard Specification for Carbon Steel Forgings for Piping Applications

ASTM A 216/A 216M (1993; R 1998) Standard Specification for Steel Castings, Carbon, Suitable for

Fusion Welding, for High Temperature Service

ASTM A 278 (1993) Standard Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 650 Degrees F

ASTM A 278M (1993) Standard Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 345 Degrees C (Metric)

## 1.2 GENERAL REQUIREMENTS

\*\*\*\*\*  
NOTE: If Section 15003 GENERAL MECHANICAL PROVISIONS is not included in the project specification, applicable requirements therefrom should be inserted and the following paragraph deleted.  
\*\*\*\*\*

Section 15003 GENERAL MECHANICAL PROVISIONS applies to work specified in this section.

Manufacturer's Catalog Data shall be submitted for steam traps in accordance with referenced standards contained in this section.

Installation Drawings for steam traps shall be in accordance with the manufacturer's published instructions.

Listing of Product Installation shall be submitted for steam traps, indicating at least five installed units, similar to those proposed for use, that have been in successful service for a minimum of five years.

## 1.3 SUBMITTALS

\*\*\*\*\*  
NOTE: Review submittal description (SD) definitions in Section 01330 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.  
\*\*\*\*\*

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES in sufficient detail to show full compliance with the specification:

SD-03 Product Data

Manufacturer's Catalog Data shall be submitted for steam traps in accordance with paragraph entitled, "General Requirements," of this section.

#### SD-02 Shop Drawings

Installation Drawings shall be submitted for steam traps in accordance with paragraph entitled, "General Requirements," of this section.

#### SD-07 Certificates

Listing of Product Installation shall be submitted for steam trap assemblies in accordance with paragraph entitled, "General Requirements," of this section.

Certificates shall be submitted for the following in accordance with paragraph entitled, "Materials," of this section.

Steam Traps  
Trap Bodies and Components

## PART 2 PRODUCTS

### 2.1 MATERIALS

Traps exposed to weather shall be freezeproof.

Certificates shall be submitted for Steam Traps and Trap Bodies and Components showing conformance with the referenced standards contained in this section.

### 2.2 TRAP APPLICATION

<u>SERVICE</u>	<u>TRAP TYPE</u>
Steam mains, risers, branches	Type IB, inverted bucket with thermostatic air vent where necessary
Steam mains, risers, and branches, weather-exposed and subject to freezing	Refer to drawings
Steam coils associated with fans	Type F&T, float and thermostatic
Steam coils not associated with fans and not subject to freezing	Type T, thermostatic
Hot-water converter	Type F&T, float and thermostatic

SERVICE  
Flash tank

TRAP TYPE  
Type IB, inverted bucket

### 2.3 TRAP-SIZING CRITERIA

Traps in steam mains, risers, and branches shall be sized to provide an actual capacity, under normal operating conditions, of not less than three times the normal condensing rate.

Traps draining underground steam mains shall be sized to provide an actual capacity, under normal operating conditions, of not less than four times the normal condensing rate.

Traps in steam mains, risers, and branches, weather-exposed and subject to freezing, shall be sized to provide an actual capacity, under normal operating conditions, of two times normal condensing rate and shall be duplexed. Two identical traps shall be provided, sized appropriately at each drainage point.

Traps draining steam coils under modulating control shall be sized to provide an actual capacity, under conditions normal to the system and including 1/2-pound per square inch (psi) 3.5 kilopascal coil pressure, of two times normal condensing rate and shall be capable of opening at maximum coil steam pressure.

Traps in all other services shall be sized to provide an actual capacity, under normal operating conditions, of three times normal condensing rate.

Trap safety factors are minimal and shall be increased where necessary to ensure proper system drainage for a given application but shall not be decreased without written approval.

### 2.4 TRAP TYPE, CONSTRUCTION, AND MATERIALS

Trap bodies and components shall have a primary working steam pressure (wsp)-rating equal to or in excess of the maximum wsp of the steam system to which applied.

Trap bodies for pressures 125-psi wsp 860 kilopascal and under shall be cast iron in accordance with ASTM A 278 ASTM A 278M, Class 30.

Welded end connection trap bodies shall be [cast steel in accordance with ASTM A 216/A 216M, Grade WCB] [forged carbon steel in accordance with ASTM A 105/A 105M].

Traps shall have permanent external identification of service rating and orifice size.

#### 2.4.1 Type IB

Inverted bucket traps shall have AISI 300 Series corrosion-resistant steel floats and operating mechanisms and hardened, 13 percent chrome corrosion-resistant steel seats and valves.

Thermostatic elements shall be bimetallic type.

Traps shall be designed to permit removal and replacement of all operating and wearing parts without disturbing piping connections to trap body.

Strainers shall be provided as an integral part of the body.

Bodies shall be provided with plugged priming and draining openings.

Test cocks shall be provided.

#### 2.4.2 Type F&T

Float and thermostatic traps shall have AISI 300 series corrosion-resistant steel, heliarc-welded floats and operating mechanisms, and hardened, 13 percent chrome corrosion-resistant steel seats and valves.

Thermostatic elements shall be balanced pressure type, with corrosion-resistant alloy bellows charged with a fluid that will provide most rapid response to changes in temperature.

Bellows shall be suitable for service with condensate having a pH of 6.0.

Traps shall be designed to permit removal and replacement of all operating and wearing parts without disturbing piping connections to trap body.

Bellows shall be designed to permit removal while hot without overexpansion and shall be shielded from direct blast of steam and condensate.

Bodies shall be fitted with drain plug.

#### 2.4.3 Type T

Thermostatic traps shall be balanced pressure type, with corrosion-resistant alloy bellows charged with a fluid that will provide most rapid response to change in temperature.

Bellows shall be suitable for service with a condensate having a pH of 6.0.

Bellows shall be shielded from direct blast of steam and condensate and shall be designed to permit removal while hot without overexpansion.

Valves and valve seats shall be hardened, 13 percent chrome corrosion-resistant steel.

Traps shall be designed to permit removal and replacement of all operating and wearing parts without disturbing piping connections.

### PART 3 EXECUTION

#### 3.1 TRAP INSTALLATION

Traps shall be installed in accordance with the manufacturer's instructions.

### 3.2 COMPONENT INSTALLATION

Trap components shall be installed in accordance with the manufacturer's instructions.

-- End of Section --